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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/546,085 | 04/10/2000 | Allan Bradley | 11635-010001 | 3389 |

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| EXAMINER |
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CHUNDURU, SURYAPRABHA

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| ART UNIT | PAPER NUMBER |
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1637

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/546,085

Applicant(s)

BRADLEY ET AL.

Examiner

Suryaprabha Chunduru

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-41,63,64 and 78-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-41,63,64 and 78-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' response to the office action filed on September 30, 2003 has been entered.
2. This application has a filing date as April 10, 2000 and claims priority to a nonprovisional application 09/071,876 (now a US patent 6, 048, 695) filed on May 4, 1998.

New Grounds of Rejections

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The instant claim 17 is indefinite and unclear because the claim recites "alkoxysaline group soluble in solution". It is unclear whether the compound having the formula R_1-X-R_2 is soluble in solution or only the R_2 comprising alkoxysilane is soluble in solution.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

A. Claims 8-9, 13 -16, 78 are rejected under 35 U.S.C. 102(b) as being anticipated by Plueddemann (USPN. 4,231,910).

Plueddemann teaches a modified biological molecules (primer compositions) a composition of claims 8, 13-15, wherein Plueddemann teaches that the composition comprises a

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nucleic acid (DNA) covalently bound to a compound having the formula R_1-X-R_2 wherein R_1 is a cyclic ether group (epoxy group), R_2 is an alkoxysilane group and X is a moiety linking cyclic ether group and the alkoxysilane group (see column 2, lines 21-28) and the cyclic ether group comprises epoxide group (ethylene oxide) and alkoxysilane comprises trimethyloxysilane (see column 2, lines 22-28).

With regard to claim 9, 78, Pluddeman teaches that a biological molecule comprises a nucleic acid (DNA-oligonucleotide or primer) (see column 2, lines 5-35);

With regard to claim 16, Plueddeman also teaches that the compound is 3-glycidoxypentyltrimethoxysilane (see column 2, lines 23-24); alkoxysilane or organosilane comprising compounds are soluble in solution (see column 3, lines 1-14). Thus the disclosure of Plueddeman meets the limitations in the instant claims.

B. Claims 39-40, 63-64, 82-84, 86 are rejected under 35 U.S.C. 102(e) as being anticipated by Gray et al. (USPN. 5,851, 769).

Gray et al. teach composition of claims 39-40, 63-63, 82-84, 86, comprising a nucleic acid or a modified biological molecule (nucleic acid) wherein Gray et al. teach that the composition comprises biological molecule covalently bound to a compound having formula R_1-X-R_2 , wherein R_1 is an amino group, R_2 is an alkoxysilane group, X is a linking moiety, and the compound includes 3-aminopropyl triethoxysilane which comprises ethoxysilane (see column 19, lines 32-48, column 8, lines 54-64).

With regard to claims 39-40, 63-64, 82-84, 86, Gray et al. also teaches that the solid support to which the said biological molecule is attached comprises a glass, or mica or a metal

oxide surface (see column 19, lines 49-67, column 20, lines 1-6). Thus the disclosure of Gray et al. meets the limitations in the instant claims.

C. Claims 8-10, 12, 17-19, 21, are rejected under 35 U.S.C. 102(e) as being anticipated by Beattie (USPN. 6,426,183).

Beattie teaches a composition of claims 8, 17, comprising a nucleic acid or a modified biological molecule (nucleic acid) wherein Beattie teaches that the composition comprises biological molecule covalently bound to a compound having formula R_1-X-R_2 , wherein R_1 is a cyclic ether group, R_2 is an alkoxysilane group, X is a linking moiety, and the compound cyclic ether group contains epoxy group (see column 18, lines 52-65). Beattie also teaches that the 5' amino or 3' amino-propanol nanomers are attached to epoxysilinated substrate, and that the 3'-amino propanol-derivatized oligonucleotide and underivatized glass is a covalent bond, more specifically an ester linkage produced through the hydroxyl group (see column 16, lines 48-66).

With regard to claims 9-10, 12, 18-19, 21, Beattie also teaches that the biological molecule comprises compounds such as oligonucleotides, peptides, polypeptides, proteins, hormones, antibodies, catalyst molecules, carbohydrates and other organic compounds (see column 14, lines 3-11, column 16, lines 48-67, column 17, lines 1-5, column 18, lines 52-65); Thus the disclosure of Beattie meets the limitations in the instant claims.

D. Claims 8, 11, 16-17, 20, 41, 85 are rejected under 35 U.S.C. 102(b) as being anticipated by Rauh et al. (5,401,415).

Rauh et al. teach a composition of claims 8, 11, 17, 20, 41, 85 comprising a lipid molecule, wherein Rauh et al. teach that the composition or a modified biological molecule covalently bound to a compound having formula R_1-X-R_2 , wherein R_1 is a cyclic ether group/ or

an amino group, R₂ is an alkoxysilane group, X is a linking moiety, and the compound cyclic ether group contains epoxy group (see column 6, lines 26-67, column 7, lines 15-52).

With regard to claims 16, Rauh et al. also teach that the compound is 3-glycidoxypolytrimethoxysilane, which is soluble in solution (see column 9, lines 9-16).

With regard to claims 41 and 85, Rauh et al. also teach that the linking group includes aliphatic chain (see column 3, lines 50-67, column 4, lines 1-2, column 7, lines 15-52. Thus the disclosure of Rauh et al. meets the limitations in the instant claims.

Response to arguments

5. Applicants' response to the office action is fully considered and found persuasive in part.

6. With reference to the rejections under obviousness double-patenting and provisional double-patenting, Applicants arguments and terminal disclaimer are fully considered and the rejection is withdrawn herein in view of the Terminal Disclaimer.

7A. With regard to the rejection made in the previous office action under 102(b) anticipated by Krinski et al., Applicants' arguments and amendment are fully considered and found persuasive and the rejection is withdrawn herein for the instant claims 63-64 and claims 8, 12-16 and 84 in view of the amendment and arguments.

7B. With regard to the rejection of claims 8-9, 12, 15, 17-18, 21-22, 25-29, 31-32, and 78-81 under 35 U.S.C. 102(e) as being anticipated by Beattie (USPN. 6,426,183). Applicants' arguments and amendment are fully considered and found not persuasive and the rejection is maintained herein Applicants argue that Beattie et al. did not teach a cyclic ether group. The argument is fully considered and found not persuasive. Beattie et al. teach at least one amino or at least one hydroxyl group reacts with silane-containing substrate (see column 2, lines 18-42)

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and the reaction is facilitated using epoxysilanized glass (see column 16, lines 48-66), which indicates that epoxy silane contains cyclic ether group. Further alkoxysilane group of the epoxysilane is soluble in solution as discussed above. Further, Applicants argue that Beattie et al. did not teach any modified biological molecule covalently attached to a compound having at least an amino or a hydroxyl group and a silane group. This argument is found not persuasive because Beattie et al. disclose on column 18, lines 10-16, that the bond formed between 3'-aminopropanol-derivatized oligonucleotide and underivatized glass is a covalent bond, more specifically an ester linkage produced through the hydroxyl group. Thus the disclosure of Beattie et al. meets the limitations in the instant claims.

7C. With regard to the rejection of claims 17, 21-29, 79-80 under 35 U.S.C. 102(e) as being anticipated by Gray et al. (5,851, 769), Applicants' arguments and amendment are fully considered and found not persuasive. Applicants argue that Gray et al. did not teach that an alkoxysilane is soluble in solution. This argument is fully considered and found not persuasive. Because examiner notes that alkoxysilane of the instant claims is same as the alkoxysilane group of the teachings of Gray et al. and would have the same inherent properties, that is, same solubility property. The amendment reciting "soluble in solution" is an inherent property of alkoxysilane since the structure is same. It is noted that it is noted that as MPEP 2112 states, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). In the instant case since

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both structures are identical (that of the claimed invention and of Gray et al.) and yield the same result thus the rejection is maintained.


Conclusion

Claims 33-37 are free of art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suryaprabha Chunduru whose telephone number is 571-272-0783. The examiner can normally be reached on 8.30A.M. - 4.30P.M, Mon - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and - for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.


Suryaprabha Chunduru
February 19, 2004


JEFFREY FREDMAN
PRIMARY EXAMINER